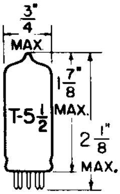
TUNG-SOL

PENTODE

MINIATURE TYPE

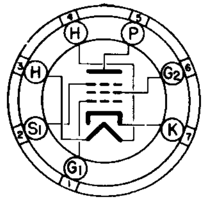


GLASS BULB

COATED UNIPOTENTIAL CATHODE

HEATER
6.3 VOLTS 0.3 AMP.
AC OR DC

ANY MOUNTING POSITION



BOTTOM VIEW
MINIATURE BUTTON
7 PIN BASE

7BK

THE 5749/6BA6W IS A RUGGEDIZED, REMOTE CUT-OFF PENTODE VOLTAGE AMPLIFIER OF THE SEVEN PIN MINIATURE CONSTRUCTION. IT HAS EXTREMELY LOW GRID-PLATE CAPACITANCE AND HIGH TRANSCONDUCTANCE TO PERMIT EFFICIENT OPERATION IN SUCH APPLICATIONS AS RF AND IF AMPLIFIERS. CONTROLS ON THE PRODUCT AVERAGE FOR SUCH CHARACTERISTICS AS HEATER CURRENT, PLATE CURRENT, SCREEN GRID CURRENT AND TRANSCONDUCTANCE ASSURE THAT THESE CRITICAL CHARACTERISTICS WILL REMAIN WELL CENTERED. SINCE IT MUST BE ABLE TO WITHSTAND SEVERE MECHANICAL TESTS TO MEET TEST SPECIFICATIONS, THE 5749/6BA6W IS ESPECIALLY SUITED FOR USE IN MILITARY OR INDUSTRIAL AIRBORNE EQUIPMENT WHICH MAY BE SUBJECTED TO SEVERE SHOCK AND VIBRATION.

DIRECT INTERELECTRODE CAPACITANCES

	WITH SHIELD #315	WITHOUT SHIELD	
MAXIMUM GRID #1 TO PLATE (RATED)	.0035	.0035	μμf
INPUT (RATED)	5.5	5.5	μμf
MAXIMUM	---	6.6	μμf
MINIMUM	---	4.4	μμf
OUTPUT (RATED)	5.5	5.0	μμf
MAXIMUM	---	6.5	μμf
MINIMUM	---	3.5	μμf

RATINGS

ABSOLUTE MAXIMUM VALUES

HEATER VOLTAGE	6.3±10%	VOLTS
MAXIMUM DC PLATE VOLTAGE	330	VOLTS
MAXIMUM DC GRID #2 VOLTAGE	150	VOLTS
MAXIMUM PLATE DISSIPATION	3.3	WATTS
MAXIMUM GRID #2 DISSIPATION	0.7	WATT
MAXIMUM HEATER-CATHODE VOLTAGE	±100	VOLTS
MAXIMUM BULB TEMPERATURE	165	°C
MAXIMUM ALTITUDE	10 000	FEET
MAXIMUM SHOCK	450	G

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CLASS A_1 AMPLIFIER

HEATER VOLTAGE		6.3		VOLTS
HEATER CURRENT		0.3		AMP.
PLATE VOLTAGE	100		250	VOLTS
GRID #3 VOLTAGE	0		0	VOLTS
SCREEN GRID VOLTAGE	100		100	VOLTS

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TUNG-SOL

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TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS – CONT'D.

CLASS A_1 AMPLIFIER

CATHODE BIAS RESISTOR	68	68	OHMS
PLATE RESISTANCE (APPROX.)	0.25	1.0	MEGOHM
TRANSCONDUCTANCE	4300	4400	μMHOS
PLATE CURRENT	10.8	11.0	mA
SCREEN CURRENT	4.4	4.2	mA
GRID #1 VOLTAGE, Gm = 40 μMHOS	–20	–20	VOLTS

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

E_f = 6.3V, E_b = 250Vdc, E_{c1} = 0Vdc, E_{c2} = 100Vdc, R_k[A] = 68OHMS, E_{c3}[B]

	INITIAL				500 HOUR LIFE TEST		
	INDIVIDUAL MIN.	INDIVIDUAL MAX.	PROD. MIN.	AVG. MAX.	INDIVIDUAL MIN.	INDIVIDUAL MAX.	
HEATER CURRENT	275	325	289	311	275	325	mA
HEATER CATHODE-LEAKAGE (E_{hk} =±100 Vdc)	---	10	---	3	---	10	μAdc
GRID CURRENT (E_{c1}=–1.0Vdc, R_{g1}=0.25MEG)	---	–1.0	---	–0.2	---	–1.0	μAdc
PLATE CURRENT	8.5	13.5	9.4	12.6	---	---	mAdc
TRANSCONDUCTANCE (1)	3600	5200	3910	4890	3000	5200	μMHOS
INSULATION OF ELECTRODES[C] (E_f = 6.3V, E(g1–all)= –100Vdc, E(p–all)= –300Vdc)							
R(g1–all)	100	---	---	---	50	---	MEGOHMS
R(p –all)	100	---	---	---	50	---	MEGOHMS
SCREEN CURRENT	---	5.6	---	5.0	---	---	mAdc
TRANSCONDUCTANCE (2)[D] (E_f = 5.5V)	3100	---	3560	---	---	---	μMHOS
Δ AVERAGE TRANS-CONDUCTANCE (1)	---	---	---	---	---	17	PERCENT
TRANSCONDUCTANCE (3) (E_{c1} =–20Vdc, R_k =0, C_k =0)	5	100	20	60	---	---	μMHOS
GRID EMISSION[E] (E_f =7.5V, E_{c1}=–25Vdc, R_{g1} =0.5 MEG, R_k =0, C_k = 0)	---	–1.0	---	---	---	---	μAdc

SPECIAL REQUIREMENTS

	MIN.	MAX.	
VARIABLE FREQUENCY VIBRATION[F] (R_p = 2000)	---	400	mVac
VIBRATIONAL FATIGUE[G]	---	---	
MINIATURE TUBE BASE STRAIN[H] (NO VOLTAGES)	---	---	
STABILIZATION[J] (INTERMITTENT LIFE TEST CONDITIONS OR EQUIVALENT)	---	---	
SHOCK[K] (HAMMER ANGLE = 30°, E_{hk} = 100Vdc, R_{g1} =0.1 MEG., C_k =0)	---	---	
POST SHOCK AND VIBRATIONAL FATIGUE TEST END POINTS			
GRID CURRENT	---	–2.0	μAdc
HEATER-CATHODE LEAKAGE	---	30	μAdc
LOW FREQUENCY VIBRATION	---	450	mVac
TRANSCONDUCTANCE (1)	3000	---	μMHOS
SHORT AND CONTINUITY[L]	---	---	
RF NOISE[M] (E_{sig} = 15mVac, C_k= 0.2 μf)	---	---	

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TUNG-SOL

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SPECIAL REQUIREMENTS - CONT'D.

	MIN.	MAX.	
NOISE AND MICROPHONICS[N] (E_f=6.3Vdc, E_{bb}=E_{cc2}=300Vdc, E_{cg1}=200mVac, R_p=10,000, R_k=200, R_{g2}=60,000, C_{g2}=2μf)	---	200	mVac
LOW FREQUENCY VIBRATION[O] (R_p = 2000)	---	300	mVac
INTERMITTENT LIFE TEST (E_b=300Vdc, E_{c2}=150Vdc, E_{hk}=135, R_{g1}=0.25MEG. R_k=230, C_k=0)	---	---	
HEATER CYCLING LIFE TEST (E_f=7.5V, E_b=E_{c1}=E_{c2}=E_{c3}=0, E_{hk}=135Vdc)	2000	---	CYCLES
HEATER CYCLING LIFE TEST END POINTS HEATER-CATHODE LEAKAGE	---	20	μAdc

NOTES

[A] THE CATHODE RESISTOR SHALL BE SHUNTED WITH A CAPACITIVE REACTANCE NOT EXCEEDING 3 OHMS AT 60 CYCLES.

[B] TIE GRID #3 TO THE NEGATIVE TERMINAL OF THE CATHODE RESISTOR.

[C] SEE MIL-E-1C 4.8.2

[D] PREHEAT ALL TUBES TO BE TESTED FOR TRANSCONDUCTANCE (2) UNDER THE FOLLOWING CONDITIONS FOR A PERIOD OF 5 MINUTES PRIOR TO TESTING. E_f=5.5V, E_b=250Vdc, E_{c1}=E_{c3}=0, E_{c2}=100Vdc, R_k = 68, R_{g1}= 0.5MEG.

[E] PREHEAT ALL TUBES TO BE TESTED FOR GRID EMISSION UNDER THE FOLLOWING CONDITIONS FOR A PERIOD OF 5 MINUTES PRIOR TO TESTING. E_f=7.5V, E_b=250Vdc, E_{c1}=E_{c3}=0, E_{c2}=100Vdc, R_k = 68, R_{g1}=0.5MEG. TWO SECONDS SHALL BE THE MAXIMUM TIME BETWEEN PREHEAT AND TEST.

[F] SEE MIL-E-1C 4.9.20.3

[G] SEE MIL-E-1C 4.9.20.6

[H] SEE MIL-E-1C 4.9.6.1

[J] SEE MIL-E-1C 4.7.5

[K] SEE MIL-E-1C 4.9.20.5

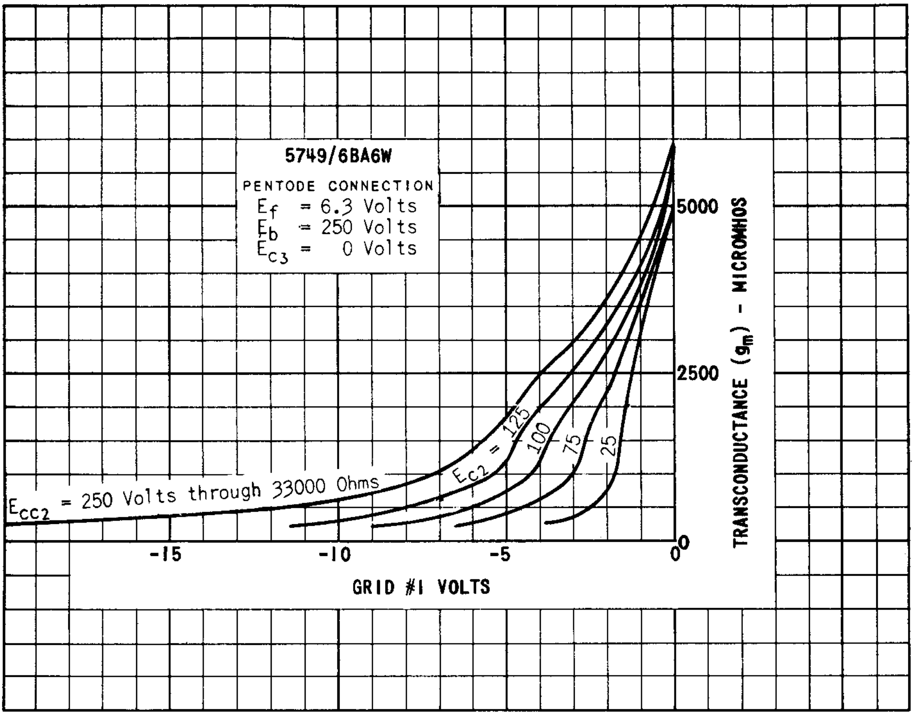
[L] SEE MIL-E-1C 4.7.5

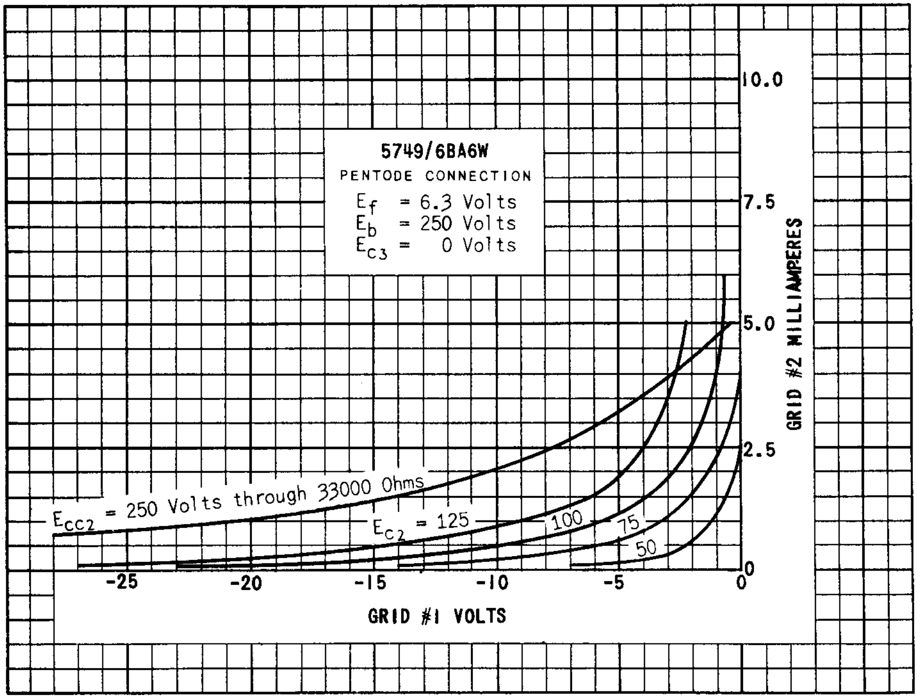
[M] SEE MIL-E-1C 4.10.3.1

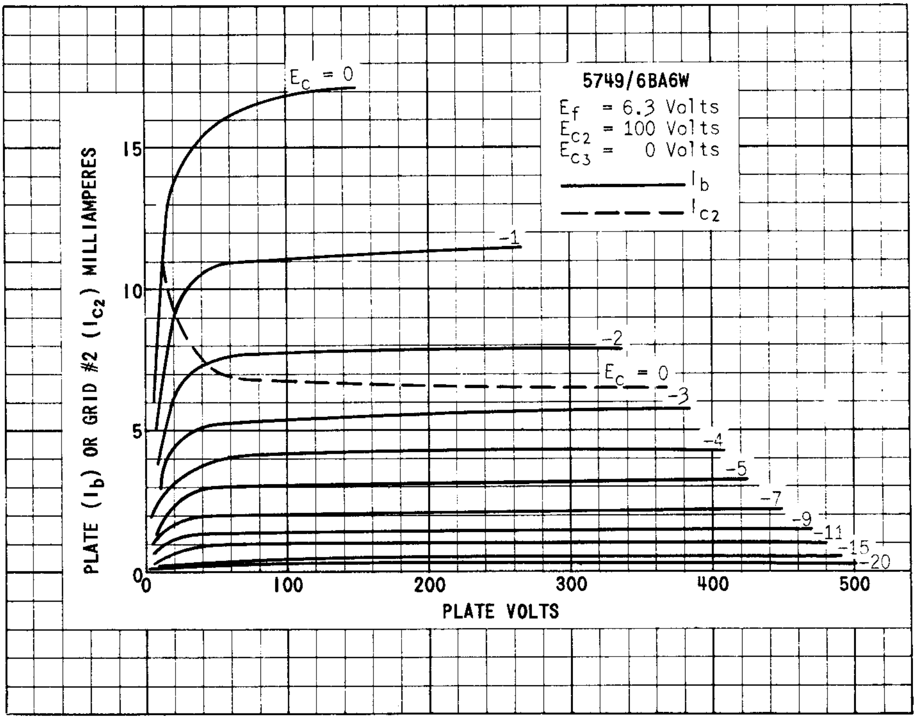
[N] SEE MIL-E-1C 4.10.3.5

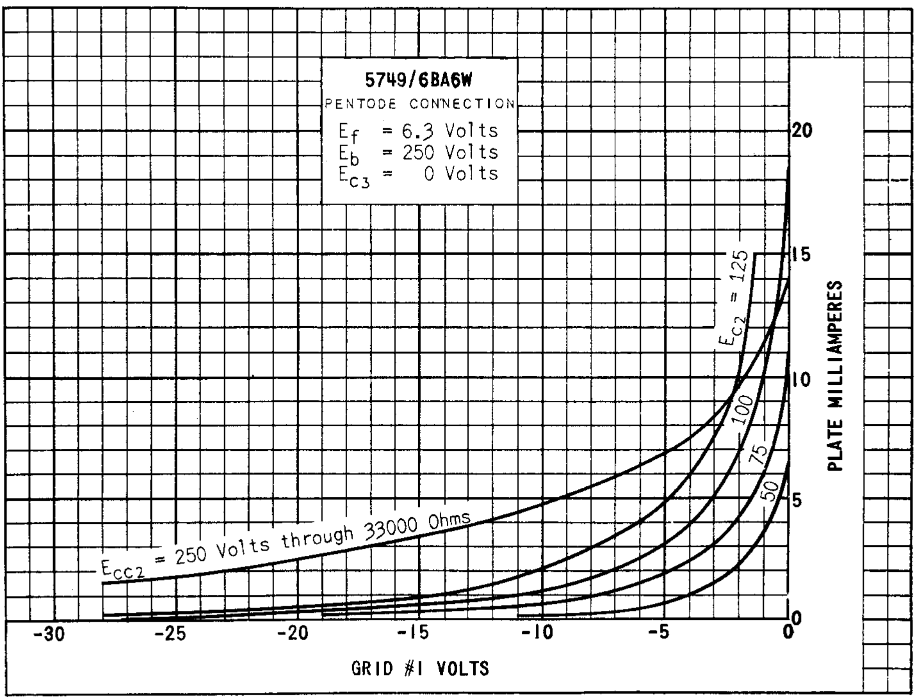
[O] SEE MIL-E-1C 4.9.20.4

5749/6BA6W
PREMIUM TUBE






5749/6BA6W
E_f = 6.3 Volts
E_{c2} = 100 Volts
E_{c3} = 0 Volts
I_b
I_{c2}
E_c = 0
-1
-2
E_c = 0
-3
-4
-5
-7
-9
-11
-15
-20
PLATE (I_b) OR GRID #2 (I_{c2}) MILLIAMPERES
0
5
10
15
0
100
200
300
400
500
PLATE VOLTS


5749/6BA6W
PENTODE CONNECTION
E_f = 6.3 Volts
E_b = 250 Volts
E_{c3} = 0 Volts
E_{c2} = 125
100
75
50
E_{cc2} = 250 Volts through 33000 Ohms
PLATE MILLIAMPERES
0
5
10
15
20
-30
-25
-20
-15
-10
-5
0
GRID #1 VOLTS